

2. (Amended) The polypeptide of any one of claims 1, 32, or 33, wherein the amino acid sequence is at least about 8 amino acids to at least about 100 amino acids in length.
3. (Amended) The polypeptide of claim 2, wherein the amino acid sequence is at least about 14 amino acids to at least about 30 amino acids in length.
4. (Amended) The polypeptide of any one of claims 1, 32 or 33 wherein the entire polypeptide after the start methionine is encoded by a reading frame +1 or +2 to the standard hepatitis C reading frame.
5. (Amended) The polypeptide of any one of ^aclaims 1, 32, or 32 wherein the amino acid sequence is encoded by a reading frame corresponding to the reading frame of SEQ ID NO:1 in which the first nucleotide of SEQ ID NO:1 is the first nucleotide of a codon.
6. (Amended) The polypeptide of claim 5, wherein the amino acid sequence is encoded by the nucleic acid molecule of SEQ ID NO:1 and causes an immune response in a subject.
7. (Amended) The polypeptide of claim 1, wherein the polypeptide comprises an amino acid sequence at least about 60% ~~70%~~ identical to the amino acid sequence shown in SEQ ID NO:2 using FASTA alignment and causes an immune response in a subject.
8. (Amended) The polypeptide of claim 1, wherein the polypeptide comprises an amino acid sequence at least 90% identical to the amino acid sequence shown in SEQ ID NO:2 and causes an immune response in a subject.
9. (Amended) The polypeptide of claim 1, wherein the polypeptide comprises an amino acid sequence shown in SEQ ID NO: 2 using FASTA alignment and causes an immune response in a subject.

10. (Amended) The polypeptide of claim 1, wherein the polypeptide comprises an amino acid sequence encoded by a nucleic acid molecule which hybridizes under high stringency to the nucleotide sequence shown in SEQ ID NO:1.

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11. (Amended) The polypeptide of claim 1, wherein the polypeptide comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, and SEQ ID NO:8 and causes an immune response in a subject.

12. An isolated or recombinant polypeptide comprising an amino acid sequence selected from the group consisting of: LNLKEKP(X1)(X2)TPT(X3) and AAHRT(X4)SSR(X5)(X6)VR, wherein X1 is N or K, X2 is V or E, X3 is A or V, X4 is L or S, X5 is A or V, and X6 is A or V.

13. A polypeptide consisting of an amino acid sequence selected from the group consisting of LNLKEKPNVTPTAC and AAHRTSSSRVVR.

14. A vaccine composition for preventing hepatitis C infection in a subject comprising the polypeptide of claim 1.

15. A vaccine composition for preventing hepatitis C infection in a subject comprising the polypeptide of claim 2.

16. A vaccine composition for preventing hepatitis C infection in a subject comprising the polypeptide of claim 4.

17. A vaccine composition for preventing hepatitis C infection in a subject comprising the polypeptide of claim 7.

18. A vaccine composition for preventing hepatitis C infection in a subject comprising the polypeptide of claim 12.

A2. Amended
19. (Amended) A vaccine composition for preventing hepatitis C infection in a subject comprising a nucleic acid molecule encoding the polypeptide of claim 1.

20. (Amended) A vaccine composition for preventing hepatitis C infection in a subject comprising a nucleic acid molecule encoding the polypeptide of claim 2.

21. (Amended) A vaccine composition for preventing hepatitis C infection in a subject comprising a nucleic acid molecule encoding the polypeptide of claim 4.

22. (Amended) A vaccine composition for preventing hepatitis C infection in a subject comprising a nucleic acid molecule encoding the polypeptide of claim 7.

23. (Amended) A vaccine composition for preventing hepatitis C infection in a subject comprising a nucleic acid molecule encoding the polypeptide of claim 12.

24. An antibody which binds to a polypeptide of claim 1.

25. A kit for detecting a hepatitis C infection comprising the polypeptide of claim 1.

26. (Amended) A kit for detecting a hepatitis C infection comprising an antibody to the polypeptide of any one of claims 1, 32 or 33.

27. (Amended) A method of preventing HCV infection comprising administering the polypeptide of claim 1 to a subject or by causing the polypeptide to be synthesized in a subject prior to HCV infection such that HCV infection is prevented.

28. A method of diagnosing HCV infection comprising detecting the presence or absence of antibodies which react with the polypeptide of claim 1 in the body fluid of a subject, wherein the presence of antibodies which bind the polypeptide is indicative of an infection with HCV.

29. A method of diagnosing HCV infection comprising detecting the presence or absence of the polypeptide of claim 1 in the body fluid or tissue of a subject, wherein the presence of an HCV polypeptide is indicative of an infection with HCV.

30. (Amended) A method for identifying a compound which interacts with the polypeptide of claim 1, comprising:

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contacting said polypeptide with a compound in a cell-free system under conditions which allow interaction of the compound with the polypeptide such that a complex is formed;
separating the compounds which do not form complexes with the polypeptide from those which do form complexes with the polypeptide; and
isolating and identifying the compounds which form complexes with the polypeptide to thereby identify a compound which interacts with the polypeptide of claim 1.

Please add the following new claims:

31. A method of diagnosing HCV infection comprising detecting the presence or absence of an HCV alternate reading frame polypeptide or detecting the presence or absence of antibodies which bind to an HCV alternate reading frame polypeptide in the body fluid of a subject, wherein the presence of the HCV alternate reading frame polypeptide or antibodies which bind to the HCV alternate reading frame polypeptide is indicative of an infection with HCV.

32. An isolated or recombinant polypeptide encoded by a nucleic acid molecule derived from a hepatitis C virus, comprising an amino acid sequence encoded by a reading frame corresponding to the reading frame of SEQ ID NO:1 in which the first nucleotide of SEQ ID NO:1 is the first nucleotide of a codon.

33. An isolated or recombinant polypeptide encoded by a nucleic acid molecule derived from a hepatitis C virus, comprising an amino acid sequence at least 90% identical to the amino acid sequence shown in SEQ ID NO:2.

34. An isolated or recombinant polypeptide encoded by a nucleic acid molecule derived from a hepatitis C virus, wherein the polypeptide comprises an amino acid sequence encoded by a hepatitis C alternate reading frame.

35. The antibody of claim 24, wherein the antibody is monoclonal.